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June 26, 2009

Reference No. 056393

Mr. Michael Berkoff
Remedial Project Manager
U.S. Environmental Protection Agency - Region V
Superfund Division, Remedial Response Section #2
77 West Jackson Boulevard (SR - 6J)
Chicago, Illinois 60604 - 3590

Dear Mr. Berkoff:

Re: Additional Information to Support Proposed 3:1 Final Slope
12th Street Landfill Operable Unit No.4
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
Allegan and Kalamazoo County

This letter has been prepared as a follow up to the Pre-Final Design Report Addendum No. 1 which proposes an amendment to the final slope of the landfill to an allowable slope to a maximum of 3 horizontal to 1 vertical (3H:1V) at the 12th Street Landfill, Operable Unit No.4, Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site, Allegan and Kalamazoo County (Site). As we discussed during our telephone conversation on June 18, 2009, current Michigan regulations require that the final cover not exceed 4H:1V. Specifically, pursuant to the Michigan Solid Waste Management Act Administrative Rules promulgated pursuant to Part 115 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, effective October 20, 2005 (Part 115 Rules), R 299.4304 - Type III Landfill Final Cover Design, subrule (5) requires the cover be designed to:

(5) To prevent the ponding of water on completed fill surfaces, the grading contours shall tend to forestall development of local depressions due to post-construction settlement. Slopes of the final cover shall not exceed 1 vertical on 4 horizontal or as necessary to permit the establishment of vegetative cover. The final slope for a type III landfill that is a new disposal area shall not be less than 2%, unless the director approves a final cover that is not designed to minimize infiltration, as provided in subrule (7) of this rule, or otherwise approves a variance under R 299.4108.

As noted in R 299.4304, a variance to the final cover slope may be granted pursuant to R 299.4108 of the Part 115 Rules, which states:

(4) Variances to the following rules that are applicable to type III landfills shall be granted in writing by the solid waste control agency upon a demonstration by the applicant that the requirement in the rules is not feasible and prudent and that either the substitute requirement will provide an equivalent degree of protection for the public

health and environment or that the public health, welfare, and environment will not be additionally impaired:

- (a) R 299.4304(4), time required to reach final grades.
- (b) R 299.4304(5), final cover slope.
- (c) R 299.4305(2)(b), horizontal isolation.
- (d) R 299.4306(1) for an alternative boundary of compliance in place of the solid

Although a 4H:1V final cover, as shown by the Pre-Final Design for the 12th Street Landfill prepared by RMT, is feasible, Weyerhaeuser believes that it is not prudent to design the final cover to a 4H:1V slope for the following reasons:

- Existing slope at the Site is already greater than 3H:1V , and therefore less material would be required to be moved to provide a 3H:1V slope, which would reduce:
 - i. The health and safety risk for workers constructing the final landfill cover;
 - ii. The short-term risk to the environment as less impacted material would be exposed and moved;
 - iii. The overall carbon footprint of the remediation by reducing the greenhouse gas (GHG) emissions produced as a result of the construction; and
 - iv. Project costs and scheduling.
- A final cover designed at a 3H:1V slope provides a margin of safety that is consistent with good engineering practice and is equally protective of public health and the environment; and
- U.S. EPA has approved the design for similar landfill projects with final slopes of 3H:1V or greater in the State of Michigan.

The following paragraphs provide additional rationale to support the position that a 3H:1V design slope for the 12th Street Landfill is approvable and that designing the final cover system to a 4H:1V is not prudent.

PROTECTION OF HUMAN HEALTH AND ENVIRONMENT

With the exception of the eastern portion of the 12th Street Landfill which was regarded as part of the emergency response activities along the bank of the Kalamazoo River, currently the landfill side slopes are greater than in some areas 1.5V:1H and typically average around 2H:1V. In order to achieve a 4H:1V final slope, approximately 20,475 cubic yards of material would need to be cut from the landfill side slopes and placed on top of the landfill. In comparison, to achieve a final slope of 3H:1V the amount of cut material is reduced to 17,835 cubic yards, or an approximately 13 percent reduction in the volume of material which would need to be moved. Similarly, the surface area of exposed PCB-impacted material that would result during construction of the 3H:1V final slope would be 13 percent less compared to the 4H:1V (i.e., 128,170 square feet for 3H:1V compared to 144,320 square feet for 4H:1V).

The significantly larger volume of material that would require relocation to complete the 4H:1V design increases both the potential risk to human health and the environment during the construction of the final cover. The greater volume of material not only increases the potential that workers are exposed to PCB-impacted material, but it also increases the risk of an incident occurring on-Site which could lead to worker injury. The increased volume of material also increases the potential for contaminants becoming air borne, increasing the potential risk to downgradient receptors.

Given the time of year that the work will be completed (i.e., fall and spring), significant rainfall events could occur which have the potential to cause erosion of exposed areas during the Site regrading and cover system construction. The 3H:1V final cover design significantly reduces the amount of exposed impacted material during the construction activities, thereby reducing the potential risk that impacted material or storm water could adversely impact the surrounding area.

GREENHOUSE GAS EMISSIONS

A decrease in the slope of the landfill from 3H:1V to 4H:1V will result in an additional 2,700 cubic yards of soil that requires removal, replacement, and grading. CRA has conservatively estimated that an additional 20 hours for each type of heavy equipment operation is required to perform the unnecessary earth work (i.e., excavator, loader, off-road trucks, and dozers). The estimated 700 gallons of diesel fuel that will be combusted over 20 hours of heavy equipment operation will result in approximately 7,200 kilograms (7 tons) of carbon dioxide equivalent emissions, increasing the carbon footprint of this activity by approximately 10 percent.

The United States Environmental Protection Agency's (U.S. EPA's) Green Remediation initiative recognizes the need to consider minimizing environmental and energy footprints and promotes

reducing greenhouse gas (GHG) emissions under a "whole-site" approach. Additionally, Weyerhaeuser recognizes the global importance of reducing their environmental footprint through increasing efficiencies, decreasing emissions, and making better use of natural resources and recently announced a 10 percent reduction in their direct GHG emissions from 2000 to 2008.

The additional 7 tons of GHGs that will be emitted should the alternate 3H:1V slope not be approved through a variance consistent with MDEQ's rules, are equivalent to the GHG emissions from the operation of a light-duty truck for one year (approximately 12,000 miles) or through supplying an average household with electricity for one year. The nation-wide focus on climate change, as recognized by U.S. EPA's Green Remediation initiative and Weyerhaeuser's commitment to reducing its own carbon footprint, should be considered when evaluating the remedial approach for this and any site cleanup efforts.

PROJECT SCHEDULING AND COSTS

As noted above, modifying the side slopes of the landfill from the original design of 4V:1H to the proposed design of 3V:1H will result in approximately 12.6 percent less material that will be required to be cut from the slopes to achieve the design grade. Adopting this design change will reduce construction time by at least 5 working days. The schedule will be further reduced under the 3V:1H slope option due to the lower final elevation of the top of the landfill (reduced from 745 feet to 735 feet above mean seal level), resulting in less material required to be imported to meet the final grades, and less time to construct the cover system. U.S. EPA, MDEQ, and Weyerhaeuser have discussed on several occasions the schedule constraints of this project and any opportunity to reduce the construction schedule should be incorporated into the design.

The reduction in schedule and materials necessary to complete the 3V:1H design will have a corresponding reduction in the overall cost to complete the project. Although completing any remedial activity for a lower cost with the same level of protection to human health and the environment should always be a consideration, this is particularly prudent given the current economic crisis throughout North America.

SLOPE STABILITY EVALUATION

As part of the design review and subsequent re-design of the 12th Street Landfill cover system, a geotechnical investigation was carried out by CRA to determine shear strength of the landfill materials as presented in the Pre-Final Design Report – Addendum No. 1. Based on this investigation, detailed slope stability analysis was conducted which concluded the factor of safety of the design with a 3V:1H slope was acceptable, and therefore, no significant slope stability issues are anticipated for the proposed design. Further details on the slope stability analysis, including the complete geotechnical data to support the evaluation are provided in the Pre-Final Design Report – Addendum No. 1, Version 2 dated June 17, 2009.

PROJECT EXAMPLES APPROVED WITH 3V:1H SLOPES

CRA is aware of several landfill cover systems for closed industrial landfills that have been approved and completed within Michigan with slopes greater than the slopes required by Part 115. CRA has been the design engineer on three such projects as presented below. CRA was also the construction contractor on the Metamora Landfill site. Additional information on the projects identified below can be provided upon request.

Project Name	Location	Material Type	Final Cover Slope	Lead Agency
Metamora Landfill	Lapeer County, Michigan	Industrial	3V:1H	U.S. EPA
Fons/Old Wayne Landfills	Ypsilanti Township, Michigan	Industrial	4V:1H with some sections at 3V:1H	MDEQ
G & H Landfill Site	Macomb County, Michigan	Industrial	3V:1H	U.S. EPA

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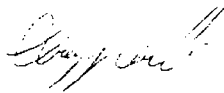
CLOSING

Although the U.S. EPA and MDEQ are still conducting their review process of the Pre-Final Design Report - Addendum No. 1, which presents the technical details to support the 3V:1H slope of the final cover system, the data collected and the data evaluations presented in the Pre-Final Design Report - Addendum No. 1 provide sufficient technical support to defend the proposed final cover slope design which will be equally protective of human health and the environment. Applicable Michigan regulations allow for a variance from the 4H:1V slope requirements where it is prudent to do so provided the final cover system design is equally protective of human health and the environment. As provided in this letter, there are several benefits to the proposed 3H:1V slope design over the 4H:1V option including reduce risk to workers and the environment during the completion of the work, a lower overall impact on the environment to complete the work, a shorter construction schedule, and lower cost.

We trust that the information provided herein gives you additional information to support the approval of the 3H:1V final cover slope design. We look forward to discussing this further with representatives of the U.S. EPA and MDEQ during our conference call which is tentatively scheduled for July 8, 2009. In the mean time, should you have any questions or require any additional information, please do not hesitate to contact the undersigned.

Yours truly,

CONESTOGA ROVERS & ASSOCIATES



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Encl.

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